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Mr. Plummer has also communicated to the Society a paper "On Astronomical Nomenclature." He proposes to designate the Minor Planets by symbols more distinctive than the present ones (which indicate only the order of discovery): for instance, (Pl.) IV. 107 would indicate a Planetoid of the fourth class, or having a magnitude between 9.0 and 9·5 when in opposition at distance unity, and 107th in order of discovery. And with regard to the Fixed Stars, down to the sixth magnitude inclusively, he proposes to divide the stars in each constellation into three groups (*a*), (*b*), (*c*), according to their magnitudes; arranging the stars in each group in order of Right Ascension or some dates previously determined on, and numbering them accordingly, those of group (*a*) from 1 to 100, those of group (*b*) from 100 to 200, and those of group (*c*) from 200 to 400; and to avoid any confusion, he suggests that the numbers might be written after the name of the constellation in the nominative case instead of before it, as Flamsteed's Nos. are marked.

On a New Form of Solar Eyepiece. By W. H. M. Christie, Esq.

In all the solar eyepieces with which I am acquainted, the reflexions by which the Sun's light is diminished take place in front of the field-lens, necessitating the use of rather large plane surfaces; a circumstance which makes these eyepieces both cumbrous and expensive. This objection may be got rid of by placing the reflecting planes between the eye-lens and the eye, as with the ordinary diagonal reflecting prism, and the pencils in this case all passing through a small circle, which is in fact the image of the object-glass as formed by the eyepiece. Very small carefully worked surfaces will therefore suffice; the only difficulty in this form of solar eyepiece being to get a wide field, a matter of small importance on the Sun, for which the restriction of the field is probably an advantage. To try this principle, I have had two solar eyepieces made, which appear to answer their purpose well.

In the first of these the pencils, after passing through the eye-lens, are reflected from the front surfaces of the three prisms, *a b c*, in succession, so adjusted that the axial pencil is reflected in each case at the polarizing angle, and placed at such a distance from the eye-lens that the image of the object-glass is formed on the second surface *b*. The rays are polarized by the two reflexions at the surfaces *a* and *b*, and then analyzed by *c*, which can be turned round an axis *d* parallel to that of the eyepiece until the light is sufficiently diminished in intensity. This is, in fact, the ordinary polarizing eyepiece applied at the eye-end, instead of in front of the field-lens, a change which makes it as easily applica-

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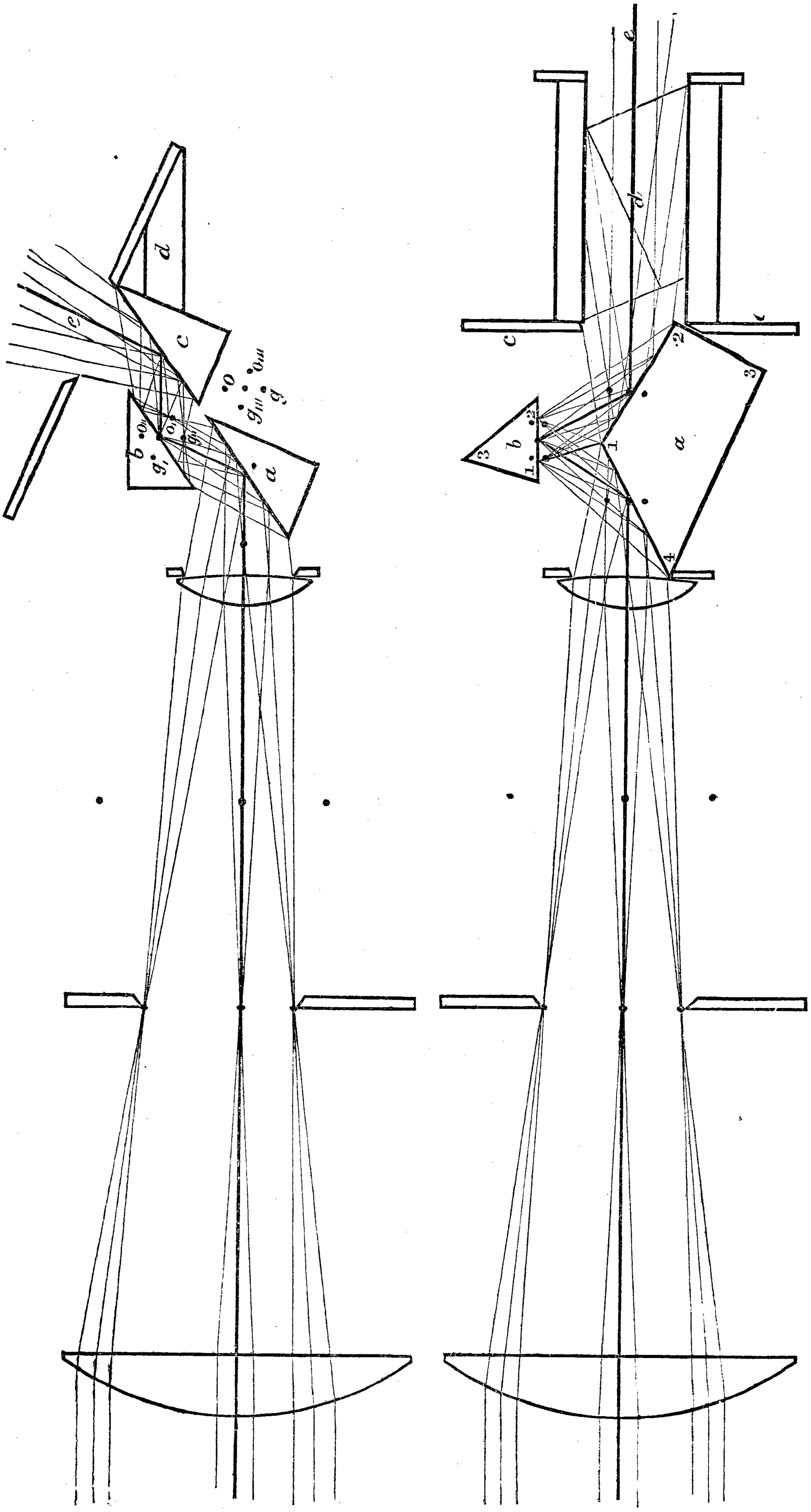

NEW FORM OF SOLAR EYEPIECE.

By W. H. M. Christie, Esq.

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be as a diagonal prism is to any eyepiece. It is important that the prism should be so placed that *b* is at the place where the image of the object-glass $o_1\,g_1$ is formed after reflexion from *a*, $o\,g$ being the place of the image as formed directly by the eyepiece. If the proportion of the distances between the prisms to the diameter of the pencils be as in the figure, a field of 20° is obtained without difficulty; this is quite as wide as that of ordinary eyepieces. The eye will be placed at *e*, where it will not be too far from its proper position to cause any practical inconvenience. It is to be remarked, that the angle of the prisms should be about 33°, so that the refracted rays, which are perpendicular to the reflected, may pass out readily, whilst those reflected internally at the second surface are sent directly back again without any risk of their reaching the eye.

The other arrangement which I have tried has the advantage of being a direct-vision eyepiece, but it involves the use of a Nicol prism, which must be of good quality. The pencils are reflected at an angle of 60° from the first surface of the prism *a*, which has an angle of 120°, are then incident at an angle of 30° on *b*, and, after reflexion from this surface, fall on the second surface of *a*, coming to the eye after three reflexions along the axis of the eyepiece, without deviation or lateral displacement. After these reflexions the light will be polarised, and its brightness can therefore be readily reduced to any desired amount by a Nicol prism placed at *c*. The distances of the prisms *a b* being adjusted as in the figure, a field of 10° can be obtained when the Nicol prism is used between the prisms and the eye. Without the Nicol the field would be about 20°, the eye being placed at the diaphragm *c*, and this extent of field could be secured by placing the Nicol between the lenses of the eyepiece and close to the eye-lens; the arrangement shown, however, appears more convenient, and the field is probably quite large enough for all practical purposes. The image of the object-glass after the first reflexion should fall on the surface *b*; the positions of the successive images are indicated by the dots, which show the points through which the upper, middle, and lower rays respectively of all the pencils pass after the successive reflexions. The angles 1, 2, 3, 4 of the quadrangular prism *a* are respectively 120°, 95°, 90°, and 55°, so that the rays fall perpendicularly on the face 23, which is silvered on the back so as to reflect them directly back again. The prism *b* has its angles 1, 2, 3 respectively 75°, 50°, and 55°, and the refracted rays will therefore emerge at right angles to the axis of the eyepiece.

I have tried this eyepiece on the Moon as well as on the Sun with excellent results, and I think it might be useful in examining the brighter points on the Moon's surface, as it brings out the gradation in the high lights very effectively. Both of the eyepieces would form convenient photometers on the extinction principle, for the Moon and Planets and the brighter Stars, which are difficult to manage by the ordinary methods;

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all that is required to adapt them to this purpose being a small graduated circle to read off the angle turned through by the Nicol, or by the prism *c*. By applying the Nicol in place of the prism *b* in the second eyepiece, the range for photometric purposes would be greatly extended, but the object must then be brought exactly to that part of the field for which the reflexion at the first surface of *a* takes place at the polarizing angle. After two or three reflexions the light is sufficiently polarized all over the field, and this is the reason for the second reflexion at *b* in the first form before analyzing at the surface *c*. For observing critical phenomena, such as a Transit of *Venus*, it might be desirable to have the prism *c* in this eyepiece removable in case of cloud, so as to admit of viewing the Sun after two reflexions, when its brightness would be reduced to 1-150th part. After the three reflexions, the brightness is 1-1700th part of its original value, and this can be reduced to zero by turning the prism *c*; in the other eyepiece the brightness after the third reflexion is only 1-3000th part.

The figures will apply to an eyepiece of any focal length by altering the scale throughout.

I have to thank Mr. Hilger for the skill with which he has carried out the plans I have here described.

Blackheath, 1876, *January* 12.

Discovery of Minor Planet (158).

Herr Knorre, of Berlin, discovered a new minor planet in the night of January 4, 1876, while searching for the planet *Siwa*. The following are his observations :—

1876.	Mean Time, Berlin.	Apparent R.A.	l.f.p.	Apparent Decl.	l.f.p.
	h m s	h m s		° ′ ′	
Jan. 4	15 22 31	7 19 58·36	9·438	+22 1 59·3	0·705
4	16 36 27	7 19 55·57	9·542	+22 2 1·7	0·749
8	15 1 3	7 16 8·32	9·435	+22 7 39·8	0·703

The planet was of the 11–12 magnitude.

1876, *January* 12.

ERRATUM.

Monthly Notices, Vol. xxxvi. No. 1, p. 12, line 3 from bottom, *for* + 2″·24 *read* – 2″·24.